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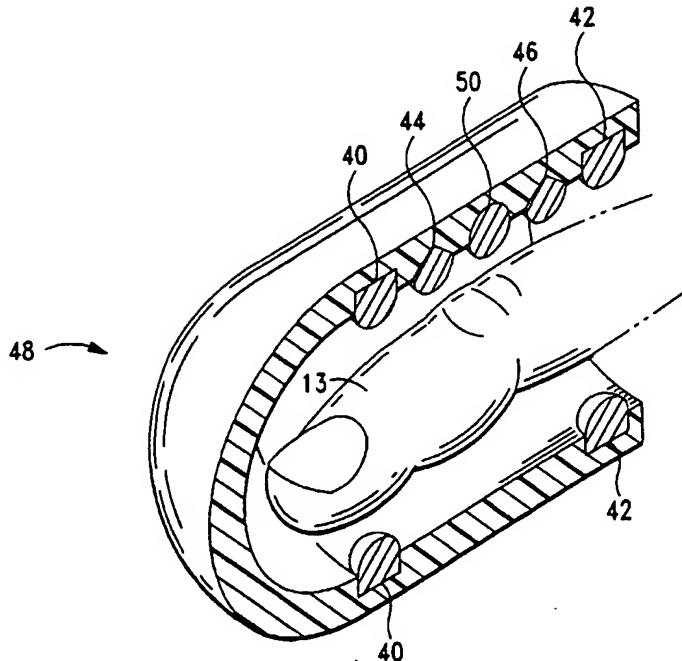
(74) Agent: FRANCIS, Ralph, C.; Francis Law Group, 1946 Embarcadero, Oakland, CA 94606 (US). Published: — With international search report.

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(54) Title: METHOD AND APPARATUS FOR NON-INVASIVE CONTINUOUS DETERMINATION OF PHYSIOLOGICAL PARAMETERS OF A PATIENT'S BLOOD



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(57) Abstract: The invention comprises devices for noninvasively monitoring physiological characteristics of a patient's blood. Generally, probes (48) having radiation emitters and detectors (40,42) are used to determine absorbance of blood within the patient's tissue to determine various blood parameters. The device also has either a position sensor (50) for determining the

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position of the probe (48) with respect to the patient's heart or a movement generator for altering the position of the probe (48) with respect to the patient's heart. The invention also comprises methods for noninvasively monitoring the physiological characteristics. In one embodiment, induced positional changes create differential hydrostatic pressures to facilitate measurement of blood parameters by absorbance. In a second embodiment, delays in pulse arrival times in coupled organs or members on opposite sides of the body are measured to determine cardiac output. The two methods are such that they can advantageously be used together.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/27654

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61B 5/02
US CL : 600/481, 407, 473, 476, 479

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 600/481, 407, 473-480, 483, 484, 500, 501, 502, 504, 507, 465, 454, 437

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,778,879 A (OTA et al) 14 July 1998, col. 2, lines 23-50, and Figs. 1 and 7.	1, 8, 13, 20, and 25
Y	US 5,111,826 A (NASIFF) 12 May 1992, col. 5, line 50 to col. 6, line 20, col. 6, line 67 to col. 7, line 66, and Figs. 1, 2, and 10.	1, 8, 13, 20, and 25
X	JP 04064334 A (SENGOKU) 28 February 1992, Abstract and Figs. 1 and 2.	1-25
A	JP 03140138 A (CLAXTON, III et al) 14 June 1991, Abstract.	1, 8, 13, 20, and 25
A	US 4,998,534 A (Claxton, III et al) 12 March 1991, Abstract.	1, 8, 13, 20, and 25
X	JP 63311929 A (YAMAZAWA) 20 December 1988, Abstract and Figs. 1 and 2.	1-25

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 63283625 A (TERADA et al) 21 November 1988, Abstract.	1, 8, 13, 20, and 25

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